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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,234	01/20/2004	Haomin Jin	1213.43404X00	7207

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EXAMINER

LIU, JONATHAN

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,234

Applicant(s)

JIN ET AL.

Examiner

Jonathan Liou

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/19/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/20/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The reference "Actuality of photogrammetry" in page 1 of specification recited by applicant is not appeared in the IDS. The examiner could not identify what reference the applicant refers to.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 12-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In regards to claims 12-18, "computer program product" in line 1 of claims 12-18; however, there is not sufficient support in the specification and drawing to teach or show the computer program product to perform the limitations recited in the claims 12-18.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 2672

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase, "according to any one of claims 1 with the aerial photograph," in the claim 11 is vague and indefinite because the examiner is not sure which claim or basis the claim 11 is depended or relied on.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Since two references written by the same author are cited in the office action, the following conventions for those references will be used throughout this office action.

Reference A of Niederost: Detection and reconstruction of buildings for a 3-D landscape model of Switzerland.

Reference B of Niederost: Reliable reconstruction of buildings for digital map revision.

Both references have been on the web for public searching since 04/09/2000. The date of updating website has been attached with the references in the form 892.

7. Claim 1-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference A of Niederost.

8. In regards to claim 1, the reference A of Niederost teaches the regions of interest and shows a project image space which perform the same functions as an image appointment unit and a vector generation unit could do recited in the claim 1, and Niederost further teaches a bold detection and coarse building reconstruction section, which serves the same functions as polygon extraction unit recited in the claim 1. Niederost does not clearly show a polygon line for the whole building surface; however, he shows extracting a polygon line of the surface of roof to demonstrate his design model (see page 6-7.)

Niederost teaches the region of interest (see page 3 and Fig. 4), which appoints at least one position in a building existing within an aerial photograph. Niederost teaches finding a building region based on a result of classification of the color around the appointed position (see Fig. 6-7, and page 4.) Niederost shows an outline of the building region and roof on Fig. 13 and Fig. 14. The Fig 9. of the reference A shows that the roof surface is determined, and a vector of the polygon line of the roof surface. Therefore, Niederost teaches all the limitations recited in the claim 1 except that he does not show extracting a polygon line of the building region. Nevertheless, Niederost demonstrates that the purpose of his design could be used for generating the outline of building in 3-D model (see page 2 and page 6-7.) Niederost shows the line of the roof surface instead of the building region because he is demonstrating the 3-D design instead of 2-D design shown in the figure1 of drawing. Further, Niederost describes that

his method is an improvement of 2-D design to 3-D design. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to understand the 2-D design method to perform the limitations recited in the claim 1 from Niederost's teaching because Niederost's method is an improvement from 2-D model to 3-D model (see page 2.)

9. In regards to claim 2, Niederost shows the coarse building reconstruction that analyzes color around the appointed position (see page 4, Fig. 6 and 7.) He demonstrated that K-mean classification, which performs the function of determining the sample color for matching (see page 4.) Also, he shows that the threshold in page 2, 3, and 6, and a region searching range in page 4. He shows that extracting the building region pixels based on a result of discriminating a similarity between a color of a roof of a building in the region searching range and the adjacent pixels (the sample color for matching.) (see page 4-6.) Finally, he shows extracting a line around the roof region pixels as the polygon line (see Fig.9 and pages 5-6.) Following Niederost's teaching and the same rationale, basis, and motivation as claim 1 above in the office action, Niederost shows all the limitation recited in the claim 2.

10. In regards to claim 3, the classification in the reference of Niederost teaches that the classification is used to determine groups of adjacent pixels of predetermined region (see page 4 and Fig. 5-7.) He further shows the region including the appointed position (Fig.5), which there are sample colors for matching and the region searching range inside (see page 4 and Fig. 7), and filtering systems including the threshold value. He

explains extracting a plurality of pixels from above region are based on a result of statistically analyzing color of the plurality of pixels (see page 4-6.)

11. In regards to claim 4, Niederost introduces the morphological filtering using the operation closing (=dilations followed by erosions) that performs the same limitations recited in the claim 4 (see page 4 and Fig. 7.)

12. In regards to claim 5, Niederost teaches the edges calculation. First the low level image processing was applied using the Canny operator followed by calculation of contour graphs, and only straight edges with a length is greater than 7 pixels were accepted. Then, the building shape can be reconstruct and draw the boundary lines are drawn to correct the building region as shown on Fig.9-10 (see page 5-6.) Hence, Niederost teaches the limitation recited in the claim 5.

13. In regards to claim 7, Niederost teaches the correcting the polygon line to one of a straight line and lines crossing each other at a predetermined angle (see page 6.)

14. In regards to claims 8-9, Fig. 9 in the reference A of Niederost shows a line of a building roof corresponds to a predetermined integration pattern. The Fig 9 shows the building region appointed by a plurality of input vectors (positions). Therefore, Niederost also shows all the limitations recited in claim 8-9.

15. In regards to claim 10, the reference A of Niederost teaches all the limitations recited in the claim 1, and he shows the building obliquely on the aerial photograph (see Fig. 2, and 3.) Further, he teaches the vegetation as the distortion due to a height of the building, and demonstrates the method to eliminate those vegetations (see page 3.) Finally, he shows the projection of a building polygon shape onto an image space (see

pages 5-6, reference A of Niederost.), which could be a ground as claimed. Hence, Niederost teaches all the limitations recited in the claim 10.

16. In regards to claim 11, the reference A of Niederost teaches that the roof region are projected and the wall of the roof region are also projected onto the DHM25 (see page 6), which is derived from the contour lines of topographic maps by interpolation (see page 2.) In other words, Niederost also teaches using his method to deliver the image onto the map. Therefor, he also shows the limitation addressed in the claim 11.

17. Claims 12-14 and 16-18 rejected under 35 U.S.C. 103(a) as being unpatentable over the reference A of Niederost as applied to claims 1-5 and 7-10 above, and further in view of Lin et al, "Building Detection and Description from a Single Intensity Image" Computer Vision and Image Understanding Vol 72, pgs. 101-121.

18. In regards to claims 12-14 and 16-18, Niederost teaches all of the limitations as recited in the claims 1-5 and 7-10 of the Office Action. He does not explicitly teach the computer program product to perform those limitations that he has taught.

Nevertheless, Lin et al. teaches that the map can be generalized by computing projected and perform an automatically system of detecting buildings to compute and correct an error (page 120, Lin et al.) Further, an automatically system needs to be perform through a computer system. Although Niederost does not explicitly teach the computer product to perform his map generation method, he mentions the commercial software (Phodis by Zeiss) to generate the map. The roof region could be generate through the software (Phodis by Zeiss) and perform the methods of Niederost's teaching on a computer product since Lin et al. teaches that an automatically system to

perform the method. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform Niederost's method by the computer program product because Lin et al. teaches the computer program product to perform his system (page 120, Lin et al.), and the functional purpose of Lin et al.'s system is the same as Niederost's method for generating the building map (page 101-120, Lin et al.)

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A of Niederost as applied to claim 1 above, and further in view of Reference B of Niederost.

20. In regards to claim 6, Niederost teaches all the limitations addressed in the claim 1 above in this office action. He only shows the rotating the line of the building region, and he lacks to show rotating of the building region as a whole so as to set the polygon line of the building region in a predetermined axis direction and smoothes the polygon line recited in claim 6. Nevertheless, Niederost teaches rotating and smoothing the building region on the reference B of Niederost (see pages 4-6, reference B of Niederost.) He teaches rotating the building region so as to set the polygon line of the building region in a predetermined axis direction (see pages 4-6, reference B of Niederost.) He further teaches the scaling to provide the smoothness of the lines of the building region (see pages 5-6, reference B of Niederost.) The reference B of Niederost is further describing a framework for automatic reconstruction of buildings in order to correct and update an initial 2-D vector data set and to derive a 3-D model for visualization (see page 1, reference B of Niederost.) Since the reference A describes an automatic reconstruction of building and tries to solve the same problem of building

detection as the reference B, one would be motivated to combine Niederost's references. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the rotating and smoothing function of the building region on Niederost's reference because Niederost teaches that the rotating and smoothing of the building region is the framework of automatic reconstruction of buildings in the reference B of Niederost (see pages 1, and 4-6, reference B of Niederost), and the reference A of Niederost also teaches the method for reconstruction of buildings (see page 1, reference A of Niederost.)

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A of Niederost, and in view of Reference B of Niederost as applied to claim 6 above, and further in view of Lin et al, "Building Detection and Description from a Single Intensity Image" Computer Vision and Image Understanding Vol 72, pgs. 101-121.

22. In regards to claim 15, the claim description is similar to claim 6. Both reference A and the reference B of Niederost teaches the method of improving detecting building region map; therefore, the same motivation as claim rejections 12-14 above in the office action to combine the teaching of the reference A, the reference B of Niederost, and the teaching of Lin et al are applied. Since the limitation recited in claim 15 is similar to claim 6, the same rationale, basis, and motivation for claim rejection as applied to claims 6, and 12-14 above in the Office Action are applied.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following related articles and patents are cited to further show the state of the art with respect to a Map Generation Device:

- U.S. Pat. No. 6,535,812 B2 to Satoh et al.
- U.S. Pat. No. 6,523,024 B2 to Yajima et al.
- Markus Niederost, Automated update of building information in maps using medium-scale imagery (1:15,000), 2001, Institute of Geodesy and photogrammetry (IGP), Swiss Federal Institute of Technology Zurich (ETHZ)
- Markus Niederost, Automated update of building information in maps using color aerial imagery (1:15,000), 2001, Institute of Geodesy and photogrammetry (IGP), Swiss Federal Institute of Technology Zurich (ETHZ)
- Noronha, Nevatia, Detection and modeling of buildings from multiple aerial images, May 2001, IEEE Transactions on Volume 23, Issue 5
- Noronha, Nevatia, Detection and description of buildings from multiple aerial images, June 1997, Computer Vision and Pattern Recognition, Pages: 588-594
- Yanlin, Sawhney, Kumar, Hsu, Learning-based building outline detection from multiple aerial images, Dec 2001, Computer Vision and Pattern Recognition, Pages(s):II-545-II-552 vol.2

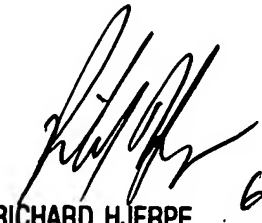
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Liou whose telephone number is 571-272-8136. The examiner can normally be reached on 8:00AM ~ 5:00PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jonathan Liou

June 7, 2005


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